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ABSTRACT

Three distinct theories can be set forth for viewing intelligence: a "super-intellect theory" associated with the belief in innate ideas; a sensualistic theory that posits no intellectual role beyond synthesizing of sense-data; and a concept of intelligence as a power to abstract, judge, and reason. Many chronic and current educational problems can be traced to faulty conceptions of intelligence. This is especially true if the implications are examined of the abstractive view for educational purposes, instructional methods, curriculum, the choice of teachers and of students, the nature of knowledge, and other matters. Intellectual development on some scale is the proximate end of education; studies have shown that when material presented is meaningful to students, both learning and retention are more effective. This proximate goal has to a large degree been lost in contemporary society and education. (DS)

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THE DEATH OF INTELLIGENCE

A Theoretical Paper

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ABSTRACT

This paper develops three views of intelligence: a "super-intellect" theory associated with the belief in innate ideas, a sensualistic theory which posits no intellectual role beyond the synthesizing of sense-data, and a concept of intelligence as a power to abstract, judge, and reason. The status of this power with respect to actual and potential being is also examined with alternatives presented. Some chronic and current educational problems are traced to faulty conceptions of intelligence, and implications of the abstractive view for educational purposes, instructional methods, curriculum, the choice of teachers and of students, the nature of knowledge, and other matters are traced.

"Until philosophers are kings, or the kings and princes of this world have the spirit and power of philosophy . . . cities will never rest from their evils . . ."[1] So stated Socrates in Plato's Republic. Is every man a candidate to become the philosopher-king? No. "There will be discovered to be some natures who ought to study philosophy and to be leaders in the State; and others who are not born to be philosophers, and are meant to be followers rather than leaders."[2] Here, four centuries before Christ, we find an elaborate social and educational system based considerably upon the premise that some people are brighter than others.

Through history, that premise appears never to have been denied at the practical level, although it has been given some theoretical twists. In the Soviet Union, for example, intelligence tests are forbidden because of the doctrine of dialectical materialism that all persons are indefinitely perfectible in principle. Nevertheless, the Soviet schools use achievement tests as we have typically used intelligence tests, and they weed out the poor performers as vigorously as Plato proposed to do.

With the rise of standardized testing, treatments of intelligence became inseparably entwined with treatments of its measurement. The influences of positivism and operationism fostered such a viewpoint. This was a period of considerable confusion. Psychologists measured the trait in order to see what it was,

only fitfully mindful that, if you don't know the nature of something, there is no way to tell whether you are measuring it. Factorial analyses of tests were done to discover the structure of intelligence, while some of those who performed such analyses simultaneously admitted their doubts about the validity of the tests they used. E. G. Boring, carrying the operationist creed to a new height, declared, "Intelligence is what these tests measure."[3]

The practice of tying theory to measurement had its scientific values, but it begged the questions of the nature and reality of what is being--in an accommodated sense, anyway--"measured." Later, use of the tests was subjected to trenchant, often emotionalized criticisms. They were said to be culturally biased and to foster elitism. It often seemed that the empirical correctness or incorrectness of the work of investigators such as Arthur Jensen and W. Shockley interested social scientists less than did the value-judgments of these scientists about the social order to which their findings would conduce.

By now, the very concept of intelligence has fallen into a strange disrepute, as if it were bad manners even to ask whether there are individual differences in this dimension. This "death of intelligence" has many implications for educational purposes, instructional methods, the shaping of curricula, the selection of teachers and of students, and other pedagogical matters. This

study will trace those implications after an analysis of what intelligence is and is not.

The topic is not only inherently important but receives a timeliness, even an urgency, from such developments as the current turmoil over racial integration of schools, debates over appropriate criteria for admission to academic programs, the alarming decline in average performance on standardized achievement tests, and the recurring theme of universal higher education. The approach taken here will be both empirical and analytical: empirical in drawing upon scientific investigations, analytical in seeking to clarify concepts and to articulate and evaluate the assumptions underlying various positions.

What Is Intelligence?

Arguably, no real definition (in the logician's sense) of an entity should be offered until after a thorough review of the evidence. The paradox involved here is that one must have some sense of what is being considered in order to know which data constitute "the evidence." The best way out of that dilemma is to consider what people have usually meant in discoursing of the entity. This vague, pre-operational notion, perhaps a "thema" in Holton's sense, presents a good place to begin. When the man on the street--or even the academician in unguarded moments--refers to intelligence, he seems to have in mind an ability to learn. Occasionally, we speak of an intelligence in the sense of a

complete being. One might say, "Oppenheimer was one of the great intellects of our century," but there is no intent to deny that this intellect was housed in a body. We may also speak of a purely spiritual being in this way, as God and angels are sometimes called "intelligences."[4]

The terms "intelligence" and "intellect" have been used interchangeably here, but each has its special connotations. Intellect and will are regarded in Scholastic thought as faculties of the soul, which is sometimes called "the intellectual principle." Aristotle viewed intellect as a power of the soul.[5] To speak of "an intellectual" is to speak of one who values ideas in themselves. High intelligence is presupposed, although a high I.Q. is no guarantor of a love of ideas.

The non-specialist thinks of learning loosely as the acquiring of knowledge and skills, as well as of interests and attitudes. The behavioristic insistence on a change in behavior does not concern him much. Since that change where learning is concerned is usually qualified as "due to experience," the matter need not concern us much for our purposes either, except to remember that behavioral evidence of learning is always scientifically required. The distinction between learning and ability to learn, however, strikes the layman as crucial, and rightly so. An ability or aptitude belongs to the order of potential as opposed to actual being. It may be called a capacity, although that term

has rather passive overtones. The aptitude with which we are now concerned is probably best called a power. In speaking of it as a potentiality, there is no intent to characterize it as potent in the sense of a storage battery or of potential energy as described in physics. Rather, it is something that can become actual, and thus stands between actuality (as predicable of, say, a letter-opener) and nothingness, and is not reducible to either, considered in itself. It is chiefly the failure to comprehend this delicate balance which has, it will be argued here, led to most of the confusion on the subject of intelligence.

We speak of creatures as "intelligent" in two senses. To say, "Man is an intelligent species" is not to compare one person with another but to compare men with brutes. To say "Johnny is intelligent" is to say that Johnny compares favorably with the average in this respect. Never, in any case, do we say, either of an idea or a segment of behavior, "This is intelligence" (noun). We may say "This is intelligent" (adjective). Intelligence, then, is thought of as an agency "behind" the ideas or behavior.

From these considerations, it can be seen that it is not possible to measure the trait except in an indirect way. We need not debate how well something can be measured if it cannot be measured at all. To measure is to estimate magnitude, using observable units such as pounds, inches, or minutes. In the present

case, we have nothing to observe, although the psychometrist can infer knowledge from behavior in a test situation, and he can further infer capacity to possess whatever knowledge is possessed. In the case of Ertl's Neural Efficiency Analyzer (which he has never characterized as "measuring intelligence"), we can assess certain physiological correlates. To use a very crude analogy, we can think of knowledge as tea and intelligence as a tea-cup. It is possible for the cup to be less than full, but it is not possible to pour into the cup more than it will hold.

We are dealing with an analogical notion, which is one reason for the persistent difficulties. "Ability to learn" applies at all levels of the phylogenetic scale where creatures have nervous systems. Our own species must be examined for special applications. Religionists have sometimes overly stressed man's uniqueness, while social scientists have often overstressed his similarities to lower animals. We can speak of specifically human intelligence in the sense of what applies to men as a species. There, we encounter a generalized power to abstract, judge, and reason.

That intelligence is a power has already been argued. On what basis can it be called general? Rationally, it can be argued thus: Whatever manifests itself through a wide range of behavior is general, because it is not limited to particular parts or aspects of reactions. Intelligence is manifested

through a wide range of actions in that, other factors being equal, one will do almost anything differently according to how much of this quality he has. Again, whatever is properly predicable of the whole person and cannot be viewed adequately in a lesser context should be called general. This is the case with intelligence, since there is nothing short of the whole organism to which one can attribute it. Empirical evidence of its generality has come chiefly from factorial analyses of intelligence tests. To accept this evidence, one must accept the validity both of the tests and of factorial analysis. The writer has reservations on both scores, but they are not such as to rule the evidence to be inadmissible. We are dealing, in the first place, with something that cannot be directly measured. Factor analysis, secondly, extracts average tendencies of groups and predicates them of individuals as psychological forces of some kind. There are answers to both questions, however. While mental power cannot be measured, it expresses itself more highly in some activities than in others. As for factor analysis, Allport observed wryly that "No one seems to have questioned whether intelligence, an obviously artificial construct of the nomothetic order, might in principle offer a different type of scientific problem from the vital and integrated personality."[6] Even if one disagrees with Allport's view that we deal with an "artificial construct" here, he makes an important point that the formulae

and procedures of factorial analysis cause fewer distortions and dislocations as applied to a static trait like intelligence than they do as applied to complexly inter-related dynamic variables.

Spearman, using this method, found a G-factor described by him as a combination of "noegenesis and abstraction."[7] Moore made a further refinement which showed a "super-G" based upon extracting a common factor from the G-factors of smaller groups.[8]

To say that there is a kind of general Vernunft is not to say that its generality extends to features other than itself. Rather illogically, writers in the 1950's began to criticize tests such as the Wechsler and the Stanford-Binet for not measuring other traits such as creativity. Terman apparently encountered that strange kind of reasoning two generations ago, for he wrote that

> . . . the Binet scale does not pretend to bring to light the idiosyncrasies of special talent, but only to measure the general level of intelligence. It cannot be used for the discovery of exceptional ability in drawing, painting, music, mathematics, oratory, salesmanship, etc., because no effort is made to explore the processes underlying these abilities.[9]

Abstraction, Judgment, Reasoning

Basic to all specifically human cognitive operations is abstracting, the conceptualizing of the universal as embodied in

particulars. To form the idea of a knife, for example, one forms the concept of a cutting instrument composed of a sharp blade fastened to a handle. One disregards for the purpose the differences among pocket-knives, carving-knives, hunting-knives, chopping knives, putty-knives, etc. One disregards whether the handle is yellow, black, blue, or some other color. Suppose it is some other aspect of the knife about which one thinks--the yellowness of its handle, say. Once again, everything is set aside except a color lying in the spectrum between green and orange. Now, a different class of objects is relevant: those which exhibit this color--lemons, for example, or the petals of sunflowers.

Olson writes that "The conception of intelligence that is dominant in our culture may be characterized by the terms 'abstractness' and 'rationality.'"[10] Terman was clear and uncomplicated: "An individual is intelligent in proportion as he is able to carry on abstract thinking."[11] The items on tests that usually have the best predictive power for academic tasks are those where abstracting is most clearly involved, such as vocabulary and analogies. Spearman held that intelligence consists in the combination of the ability to see relations and to express these relations verbally.[12]

Are abstraction and concept-formation synonymous? Yes and no. For an angelic intellect, knowing through some form of pure

intuition, concept-forming would be involved, but abstracting could not be. An angel has no body, therefore no senses, therefore no sensations, therefore nothing to abstract from. For us, however, human beings, the two are synonymous, made so by the circumstance of a material world. As Vincent Smith put it, "To the extent that a thing is material, it is scattered and disorganized, potential and indeterminate."[13] It is the task of intelligence to take out of sense-data what they in themselves could never present: the essences of things.

Knowledge is not complete in abstraction, however. A concept, in itself, asserts nothing. Judgment provides a complete cognitive act: not simply "knife" (essence) but "This is a knife." This (particular, concrete, sensory, material) is (to be correctly classed as) a knife (universal, abstract, intellective, formal). From there, reason does what it can with judgments: "Therefore, it is dangerous." Intelligence does not engage in any of these three operations by itself. The reality is a whole person knowing a whole knife. Nevertheless, the intellective power is seen most purely and clearly in that first intellective leap from a complex of sensations to the idea of a knife.

Alternate Views

It is implied in the foregoing analysis that our ideas are essentially different from sensations, although derived from them

by an abstractive act. Many psychologists, following a viewpoint developed by David Hume, reduce ideas to sensations. In so doing, they deprive intelligence of its special human character and humble it to a sort of mechanical function of sensory synthesis. They thus imply that thought is a deceptive instrument; for, we think by placing particulars in categories, and they are implying that the categories have no objective status. A few thinkers at the other extreme have harked back to the Platonic notion of innate ideas and have, accordingly, credited man with a kind of super-intellect which simply searches within itself to find the truth. Ralph Waldo Emerson often seemed to take this position. The counseling theorist, Carl Rogers, seems to take it when he suggests that the client can find the way, the truth, and the life within himself if the counselor just helps him to introspect properly.

How shall we classify the special approach of the philosopher-psychologist, John Dewey, to this subject? Dewey was once, lest we forget, a Hegelian. When he dropped the Idealist view of a Universal Mind, however, he dropped the judgment that intelligence and the world are unified by the metaphysical substratum of mind. In place of this view, he stressed intelligence as a social function. The exact status of this function for him is hard to pinpoint, Dewey's style being what it is. He implied, however, that judgment is not simply something <u>in</u> the learner. One's

activities are where his intelligence is to be found, and these are not "exclusive properties of himself; they are something in which he engages and partakes."[14] Thus Dewey makes intelligence a force, something concrete, and takes it out of the status of a power.

We need not tarry over that error of excess which detaches intelligence from experience and makes it a source of knowledge in its own right. Not many theorists in education and psychology are so rationalistic these days. Quite common, however, is an equal and opposite error.

> It consists in regarding intelligence as a purely arbitrary invention of educational psychologists. The inability to conceive of any state between something and nothing has led some social scientists to consider that, because learning ability is not the former, it must be the latter.[15]

Upon this view, intelligence is a purely arbitrary invention of educational psychologists. It is simply a name for the results of giving certain tests. The tests, in turn, are clusters of arbitrarily grouped items, or must be so regarded if consistency is to be maintained. The previously cited G-factor is one sort of refutation of this idea. Another is the relative constancy of the I.Q. Still another is the high correlations of the tests with one another and with academic achievement.

We are dealing, then, with a delicately balanced reality. It is, in Aristotelian terms, accident rather than substance, potency rather than act, but it is not nothing. Observability is not at issue in this delicate balance. "We cannot observe thought; we can observe behavior . . . Yet, thought and behavior are treated alike as exhibiting intelligence rather than being it."[16]

A brief review of the literature suffices to show how easily that equipoise is lost. For example, Pressey and Robinson wrote, "Some people's nervous systems are much more effective than others. And it is to be expected that this factor, properly called general intelligence, will put a limit or ceiling upon the extent to which . . . other factors . . . can operate."[17] Effectiveness is a quality of producing certain results, while the trait being defined is a matter of being <u>able</u> to produce these results. Piaget defined it as "a particular instance of biological adaptation," which confuses the process of adaptation with the potentiality to carry out that process.[18] Elsewhere, he says that intelligence is "the form of equilibrium toward which all the [cognitive] structures . . . tend."[19] Once more, the reference is to an achieved state rather than to the ability to achieve the state.

Other examples abound. Munn wrote, "Intelligence is a function which we may define as 'flexibility' or 'versatility' of

adjustment."[20] A function is a series of related actions. As noted earlier, one would not say of an act or a group of acts, "This is intelligence" although one might say, "This is intelligent." Combs wrote, "By the term intelligence we ordinarily refer to the effectiveness of the individual's behavior."[21] This definition misses the mark both by referring to effectiveness rather than potential for effectiveness and by referring to behavior rather than aptitude. One more instance will surely suffice. According to Horace M. Kallen, "Intelligence is possible only in a world which is plural, diversified, competitive, and changing. It is an activity which fuses the recognition of these traits with discernment of the variety and direction of their dynamic trends and with a choosing from the alternatives these present."[22] Kallen is really talking about the exercise of intelligence. Somewhat arbitrarily, he demands of nature or God a certain kind of universe to facilitate this exercise. He might have pondered with profit the observation of J. B. S. Haldane, seven years earlier, that the universe is "not only queerer than we suppose, but queerer than we can suppose."

Purposes of Education

The aims of education derive from the nature of knowledge, which derives in part from the nature of man. The last-named depends upon (or, from another viewpoint, determines) the nature

of intelligence. Some traditional educational goals are: union with God in this life and in the life to come, adjustment to society, intellectual development, vocational efficiency, and development of leadership qualities.

If intelligence is conceived after the "super-intellect" model--an organ which produces truths neither from nor about the world reported by our senses--the immediate goal of education is to achieve these truths. The view of a faculty which simply synthesizes sense-data tends to go with social adjustment as an educational aim. There is not much point in developing the intellect if there is no intellect to develop, or if (which amounts to the same thing) that intellect has no object specifically its own. In the view presented here, the chief immediate end of formal learning is to extract principles from experience. "Immediate" is used as a qualifier because such a proximate goal leaves open the question of the value or use of the knowledge. Some of the divisions of purpose that are made cannot stand under much analysis, anyway. For example, is typing a vocational or a personal subject? Does one learn English, logic, mathematics, reading, for vocational or social purposes? For spiritual or temporal ones?

John Dewey was at pains to deny any ultimate aim for education. Such a position was consistent with Dewey's denial of immutable truth, changeless reality, and absolute values. Pressed

for a goal, Dewey would offer "growth," but the morphological question to which he could offer no answer was: Growth towards what? "In our search for aims in education," wrote he, "we are not concerned . . . with finding an end outside of the educative process to which education is subordinate."[23] This would seem to imply that intelligence has no object, no destination outside of itself. This can be so if intelligence is inherently social and realized only in social developments. Such a premise requires, in turn, that the trait be actual being, not potential being as the present study asserts it to be.

As an example of the way opposites meet, we may consider the situation in the Soviet Union, where the official purpose of education is "strengthening the Soviet state and the building of a classless society."[24] What is man for the Marxist? Consistently with dialectical materialism, Engels wrote that "man is what he eats." Man is a productive animal.[25] What, then, can his intelligence be? At most, a mechanism for the establishment of conditioned reflexes, which is exactly what the officially sanctioned Soviet psychology affirms. What can the goal of education be, then, beyond conditioning people to behave as the authorities have decided they ought to behave? In contrast stands Maritain's protest: "But education is not animal training. The education of man is a human awakening."[26] He added that "what matters most in the educational enterprise is a

perpetual appeal to intelligence and free will in the young" and that "Nothing should be required of the child without an explanation and without making sure that the child has understood."[27]

Instructional Methods

The "super-intellect" theory is congruous with the Great Books program in education. Experience becomes irrelevant, unnecessary. This approach was articulated and developed especially by Mortimer Adler and Robert Hutchins. It was not argued by them that all students, or even all college students, could master such a curriculum. Indeed, some humanists such as Irving Babbitt have argued that only an elite can understand the great books. Hutchins did argue that, where the classics are properly taught, they can be mastered by the vast majority of students in public schools. The question here is not whether every intelligence is equal to such an agenda, but whether intelligence by its nature can garner wisdom in isolation from experience. The isolation, of course, is not complete. To read is to grasp written meanings. The reader does not "get meanings from the printed page." Rather, he must bring meanings to the printed page. These meanings are distilled from experience. Nevertheless, education is more than a linguistic exercise. Great books can be an important part of the curriculum. They should not, at any level, be the whole.

At the other extreme, the reductionistic view of

intelligence leads to that one-sided stress on experience which was so characteristic of John Dewey and William Kilpatrick. It is seen today in the arguments of those who hold that a child cannot understand hunger unless he is habitually deprived of meals, the pedagogy of those who clutter the teaching of arithmetic with so many audio-visual aids that these actually get in the way of the abstractive leaps that need to be made, in the epistemology of those who wish knowledge to be a concrete copying of the individual reality and try to reduce all ideas to sensations. The teacher who takes classes on frequent "field trips" without telling them beforehand what they ought to learn from these visits or checking afterwards to see if they learned it, illustrates this attitude.

The view of intelligence as a power to abstract, judge, and symbolize leads to a more balanced instructional approach than either of those just described. It recognizes the need for sense-data, since they are the raw materials from which we extract those aspects and relationships which we wish to consider. A very active role is also maintained for thought, since experience <u>in itself</u> tells us nothing. This theory recognizes, too, that experience can be vicarious. We can realize something through imaginative participation. A child does not need to jump off a building to discover the law of gravity or to put his hand in the fire to learn that flesh can burn.

Relations to Curriculum

Curriculum has traditionally been defined as a course of studies. It is thus understood as a plan. A plan lacks concrete existence until it is carried out. Since the days of Kilpatrick, however, it has been customary to define curriculum in terms of "all the experiences the child has under the guidance of the school."[28] Such a definition appears at first glance to have a strong advantage, precisely the advantage which commended it to Kilpatrick: It deals with the fact that a plan is of no value unless it is carried out. This Instrumentalist conception has a major disadvantage, though: It tends to imply that nothing stands between nothingness and the teacher's actions in the classroom. In other words, Kilpatrick's definition ignored the need for plans. A painter begins with a blank canvas and ends with a picture. The picture is in a given place at a given time. One can point to it. A musical composer, by constrast, produces a plan, not a performance. That plan should not be confused with any copy of the plan (including the original) nor yet with any instance of implementing the plan. What is the status of America the Beautiful when no one is playing it or singing it? You cannot point to it and say it is "there." It is not real in the sense in which a painting is real. Yet, neither does it revert to non-entity.

Many students of Education have parroted Kilpatrick's

definition of curriculum without realizing or accepting the epistemological context in which it arose. Most of these people are not Instrumentalists. When they talk of curricula in practical terms, they talk about courses of study, plans for learning. Kilpatrick, as an advocate of the philosophy of pure becoming, could not admit to any distinction between potency and act. Thus, faced with the necessity of regarding curriculum as "something" or as "nothing," he made it "something" in an exaggerated sense.

The relations of various conceptions of intelligence to these divergent ideas of curriculum are readily seen. A curriculum in the classical characterization is a set of logical universals. Considered as a whole, it is a universal. Universals are the object of the intelligence if the latter has an abstracting and conceptualizing function. If, on the other hand, ideas are merely collections of sense-data, there can be no such things as plans.

Contrasting views of intelligence relate not only to the question of what a curriculum is, as has been shown, but to specific curricular structures. Upon the Instrumentalist view, there can be no structure prior to or distinct from actual learning experiences. Under the "super-intellect" view, such a structure stands by itself, apart from perceptions and particulars, as noted in regard to the Great Books plan. A balance between

activities and reflection is a corollary of the third view.

Clients and Dispensers of Education

The President's Commission on Higher Education complained that "We shall be denying educational opportunity to many young people as long as we maintain the present orientation of higher education toward verbal skills and intellectual interests."[29] A simpler way of saying this would be, "Some people cannot graduate from college if it requires lots of gray matter." Similarly, many people will never be violinists with symphony orchestras if musical aptitude continues to be demanded. The statement of the Commission suggests that demanding "a capacity for grasping abstractions" of college students is somehow arbitrary and unreasonable.[30] What, then, should higher education demand and involve? The report was not given to clear language, but it spoke of "the full, rounded, and continuing development of the person" as the "first goal in education for democracy . . ."[31] People who speak of developing "the whole person" or of "full" education seldom mean what they say, since the whole person includes his intellect and a full development includes the growth of that intellect. What the Commission wanted was "adjustment" in a sense that mysteriously screens out the thinking process. They declared that, besides the aforesaid intellectual interests, higher education should address itself to "many other aptitudes--such as social

sensitivity and versatility, artistic ability, motor skill and dexterity, and mechanical aptitude and ingenuity . . ."[32]

The issues must be carefully sorted here. Few would say that a college curriculum could or should totally exclude concern with social sensitivity, mecharical skills, and the like. The point here is that all of these functions are put on a par and are set in contrast to intellectual development, as if the intellect were a barren faculty having no connections with behavioral or affective life.

The materialistic, reductionistic view of intelligence as being, at most, a process of combining sensations, is entailed in the belief that education is for "adjustment" in some minimally intellectual sense. Since anybody can adjust after some fashion, it follows that anybody should have any amount of education that he may desire, which seemed to be the commission's position. Once intelligence is identified with abstracting and judging, it becomes obvious that individual differences are a major consideration in selecting students for secondary and higher education.

The selection of teachers and professors also depends considerably upon what intelligence is. More directly, their selection depends upon what they are expected to accomplish, but we have seen how that, in turn, relates to the problem of this study. Where the goals of schooling are vaguely social and emotional, teachers will be sought who are "well rounded," who

relate easily if superficially to a variety of people. Where the goal is to teach students to see things well in the abstract, teachers will be sought who are themselves skilled in doing that--at least in their special areas.

Man and His Knowledge

The nature of man has been present throughout our analysis as a background issue. It was not brought into direct scrutiny sooner lest it appear that the theory of intelligence supported in this study is essentially dependent upon any particular philosophy of man. There are certain affinities, however, which deserve to be noted. We should thus look in a limited way at human nature, considered as mirrored in those actions which are common to all societies, those qualities which remain when acquired cultural differences have been duly noted. Theories of man, of course, reflect deeper ontologies, but the present analysis cannot push things back that far.

The positions which various thinkers have taken on the character and functioning of intelligence usually correspond (and always correspond if they are consistent) with what they have had to say about human nature. Sensualists, those who reduce all knowledge to sensations, either deny the existence of any spiritual component in man (thus casting their lot with materialism) or deny that we can know anything about such a component (thus

falling in with the world-view of phenomenalism). The "super-intellect" theory leads logically to an exaggerated dualism such as that of Plato, which sees a spirit accidentally united to a body. The conception of intelligence as an abstractive power is not intrinsically committed to any supernaturalism, as witness that Aristotle subscribed to such a theory. Nevertheless, it is compatible with a supernaturalist view which sees man as compounded of two co-existing partial principles, a spiritual soul and the matter which is governed by it to form the human composite. The question of the status of the objects of the senses is usually also answered in conformity to positions on the character and origin of ideas. The reductionist view holds that to be is to be observable (a corollary of materialism) or that nothing can be known about any other kind of reality (phenomenalism). The opposite error of excess denies the reality of the world of the senses (absolute idealism). The abstractive theory leaves the door open for acceptance both of the physical objects to which the senses attest and of objects accessible to reason only.

Impugners of the intellect often arrogate the label of holism, but only a restoration of what they deny permits the concept of a whole person knowing a whole thing. Sensualistic nominalism does not allow for a grasp of the formal structures of things, while Platonic Realism does insufficient justice to the reality of particular contingent things and events. The first

position argues, in effect, that since cognition begins in the senses, it must end there. (This is Hume's epistemology in a nutshell.) The second position argues that, since cognition ends in the intellect, it must begin there. The concept of intellective abstraction is necessary to take us from one level to the other and show how, even though the world is always concrete and ideas are always abstract, a unified knower can relate to a unified known.

A Proximate End for Education

The thesis that intelligence is what it is here said to be is consonant with a wide variety of ultimate educational ends. For, again, this power does not exist or function in isolation, nor is it an end in itself. Nevertheless, in all specifically human learning, intellectual development on some scale is the proximate end. Thus, the most important of all practical rules for the teacher is, "Teach for meaning." Transfer by generalization is one of the consequences of following that rule. The following relationships obtain:

POWER	USE	PRODUCT
Intelligence	Meaning	Positive Transfer

Studies have shown again and again that, when material presented is meaningful to students, both learning and retention are more effective.[33]

When and how did we lose sight of that proximate goal? A long and complex history looms here, the history of anti-intellectualism. That attitude has been often associated with philosophies of pure becoming. Bergson, for example, criticized the intellect for chopping the flow of events into static entities. William James, influenced by Bergson, announced that he found himself compelled to give up logic on the grounds that it has nothing to do with life. That attitude has been pervasive even until today. What Professor Perry wrote over half a century ago still holds:

> Psychology speaking for emotion and instinct has reduced intellect to impotence over life; metaphors have subordinated it to the will. Bergson and his followers have charged it with falsehood; while with Pragmatists and Instrumentalists it has sunk so low that it is dressed in livery and sent to live in the servants' quarters.[34]

The retreat from reason has become a full-scale rout in our time. The writer suggested in a talk in 1972 that many of the current esoterica were best regarded as a latter-day search for mystical experience.[35] Some of the current pseudo-mysticisms include psychedelic drugs, bio-feedback, Yoga, astrology, E.S.P., the cult of U.F.O.'s, Satanism and witchcraft, and seances.

Education is reaping the sad harvest of this history. Willard Wirtz, head of a panel which has been studying public

education, concluded that it has been "off stride for ten years." Average scores on the College Entrance Examination Board's Scholastic Aptitude Test have been falling steadily since 1962. The bringing of much money and technology to American education has not helped. The chief respect in which educational statistics are growing is violence. There were approximately 63,000 physical attacks on American secondary school teachers in 1975 and about 270,000 school burglaries, together with destruction of $200,000,000 worth of school property.

Harvard's David Riesman put it succinctly: "The counter-culture rejected intellectuality."[36] Indeed it did, just as it now rejects some of the consequences of its own rejection. But, the Establishment had essentially done the same thing long before in ways discussed herein. Education will find its true path again when it rediscovers the intelligence. Many have tried to bury that power, but it is hard to bury the living!

Footnotes

[1]Plato, The Republic, trans. Benjamin Jowett (Cleveland: World Publishing Co., 1946), p. 198.

[2]Ibid., p. 199.

[3]E. G. Boring, "Intelligence as the Tests Test It," New Republic, XXXV (1923), pp. 35-37.

[4]It is worth passing note that we also speak of information as "intelligence."

[5]Aristotle, De Anima, II, 3 (414a 32).

[6]Gordon W. Allport, Personality--a Psychological Interpretation (New York: Henry Holt and Co., 1937), p. 242.

[7]Charles Spearman and L. Wynn Jones, Human Ability; a Continuation of the Abilities of Man (London: Macmillan Co., 1950), p. 69.

[8]T. V. Moore, Multiple Correlation and the Correlation between General Factors ("Studies in Psychology and Psychiatry," III, No. 2; Washington: Catholic University of America Press, 1933).

[9]Lewis M. Terman, The Measurement of Intelligence (Boston: Houghton-Mifflin, 1916), p. 49.

[10]David R. Olson, "Culture, Technology, and Intellect," ch. 10 in Lauren B. Resnick, ed., The Nature of Intelligence (New York: John Wiley and Sons, 1976), p. 200.

[11]Lewis M. Terman and others, "Intelligence and Its Measurement--a Symposium," Journal of Educational Psychology, XII (1921), 128.

[12]Spearman and Jones, op. cit., pp. 108-109.

[13]Vincent E. Smith, The School Examined: Its Aim and Content (Milwaukee: Bruce Publishing Co., 1961), p. 5.

[14]John Dewey, Democracy and Education (New York: The Macmillan Co., 1916), p. 155.

[15]R. B. Nordberg, "Intelligence: Power and Performance," Journal of Thought, XI (November, 1976), p. 301.

[16]Ibid., p. 296.

[17]S. L. Pressey and F. P. Robinson, Psychology and the New Education, rev. ed. (New York: Harper and Bros., 1944), p. 65.

[18]Cited in H. Ginsburg and S. Opper, Piaget's Theory of Intellectual Development (Englewood Cliffs, N.J.: Prentice-Hall, 1969), p. 14.

[19]Ibid., p. 14.

[20]Norman L. Munn, Psychology--the Fundamentals of Human Adjustment (Boston: Houghton-Mifflin, 1946), p. 410. Cf., A. S. Edwards, "Intelligence as Capacity for Variability or Versatility of Response," Psychological Review, XXXV (1928), pp. 198-210.

[21]A. W. Combs, "Intelligence from a Perceptual Point of View," Journal of Abnormal and Social Psychology, XLVII (July,

1952), p. 662.

[22]Horace M. Kallen, "Can We Be Saved by Indoctrination?" Progressive Education, XI (Jan.-Feb., 1934), pp. 60-61.

[23]John Dewey, Democracy and Education (New York: Macmillan, 1910), p. 125.

[24]B. P. Yesipov and N. K. Goncharov, Pedagogy, trans. George S. Counts and N. P. Lodge (New York: John Day Co., 1947), p. 14. Cf., Wasyl Shimoniak, Communist Education (Chicago: Rand McNally, 1970), ch. 3.

[25]A. M. Dupuis and R. B. Nordberg, Philosophy and Education: a Total View, 3d ed. (Beverly Hills, Calif.: Benziger, 1973), pp. 200-205.

[26]Jacques Maritain, Education at the Crossroads (New Haven: Yale University Press, 1960), p. 9.

[27]Ibid., pp. 9-10.

[28]R. C. Faunce and N. L. Bossing, Developing the Core Curriculum (New York: Prentice-Hall, 1951), p. 95.

[29]George F. Zook et al., Higher Education for American Democracy (New York: Harper and Bros., 1947), p. 32.

[30]Ibid., p. 32.

[31]Ibid., p. 9.

[32]Ibid., p. 32.

[33]See, for example, A. R. Gilliand, "The Rate of Forgetting," Journal of Educational Psychology, XXXIX (1948), pp. 19-26.

[34]Bliss Perry, "The Integrity of the Intellect," Harvard Theological Review, XIII (July, 1920), p. 221.

[35]R. B. Nordberg, "Guidance and the New Mysticisms," address to American Personnel and Guidance Association; March 28, 1972 (Tape available from A.P.G.A., #505). This talk led to a number of articles and to the book, The Teenager and the New Mysticism (New York: Richards Rosen Press, 1973).

[36]"High Schools under Fire," Time, CX (Nov. 19, 1977), p. 75.